

CLAIMS

1. A data transfer control device for transferring data between a plurality of nodes connected to a bus, the data transfer control device comprising:

link means which provides services for packet transfer between nodes;

write means which writes a packet that has been received through the link means to a randomly accessible packet storage means; and

packet division means which writes control information of the packet to a control information area of the packet storage means, writes first data of the packet for a first layer to a first data area of the packet storage means, and writes second data of the packet for a second layer that is a layer above the first layer to a second data area of the packet storage means.

2. The data transfer control device as defined in claim 1, wherein the first data is command data used by the protocol of the first layer and the second data is data used by an application layer.

3. The data transfer control device as defined in claim 1, further comprising:

area management means which makes a full signal go active when the second data area is full, to inhibit the write means from writing the second data to the second data area, and makes

an empty signal go active when the second data area is empty, to inhibit the second layer from reading the second data from the second data area.

5 4. The data transfer control device as defined in claim 1, wherein when a request packet which is used for starting a transaction is transmitted to a responding node, transaction identification information comprised within the request packet includes indication information which indicates processing to 10 be performed when a response packet from the responding node is received; and

wherein the control information and the first and second data of the response packet are written into an area specified by the indication information within the transaction 15 identification information of the response packet, when the response packet from the responding node is received.

5. A data transfer control device for transferring data between a plurality of nodes connected to a bus, the data 20 transfer control device comprising:

means which makes transaction identification information within a request packet include indication information which indicates processing to be performed after reception of a response packet from a responding node, when the request packet 25 which is used for starting a transaction is transmitted to the responding node; and

means which performs the processing indicated by the

identification information of the response packet, when the response packet from the responding node is received.

6. The data transfer control device as defined in claim 5,

5 wherein control information and data of the response packet are written into an area specified by the indication information within the transaction identification information of the response packet, when the response packet from the responding node is received.

10 7. The data transfer control device as defined in claim 5, wherein a given bit of the transaction identification information is previously reserved as a bit for expressing the indication information.

15 8. The data transfer control device as defined in claim 5, wherein the transaction identification information is a transaction label in accordance with the IEEE 1394 standard.

20 9. A data transfer control device for transferring data between a plurality of nodes connected to a bus, the data transfer control device comprising:

link means which provides services for packet transfer between nodes;

25 randomly accessible packet storage means which stores a packet;

write means which writes a packet that has been received

write means which writes a packet that has been received from another node through the link means, to the packet storage means; and

means which reads the packet that has been written to the
5 packet storage means and transfers the packet to the link means;
wherein the packet storage means is divided into a control information area in which is stored packet control information and a data area in which is stored packet data, and the data area is divided into a first data area for storing first data
10 for a first layer and a second data area for storing second data for a second layer.

10. The data transfer control device as defined in claim 9, further comprising:

15 a first address storage means which stores a transmission area start address for reserving a transmission area in the second data area;

a second address storage means which stores a transmission area end address for reserving a transmission area
20 in the second data area;

a third address storage means which stores a reception area start address for reserving a reception area in the second data area; and

a fourth address storage means which stores a reception
25 area end address for reserving a reception area in the second data area.

11. The data transfer control device as defined in claim 10,

wherein:

the transmission area start address and the reception area start address are set to the start address of the second data area, and transmission area end address and the reception area end address are set to the end address of the second data area.

12. The data transfer control device as defined in claim 10,

10 wherein:

both the transmission area start address and the transmission area end address are set to either the start address or the end address of the second data area, the reception area start address is set to the start address of the second data area, and the reception area end address is set to the end address of the second data area.

13. The data transfer control device as defined in claim 10,

wherein:

both the reception area start address and the reception area end address are set to either the start address or the end address of the second data area, the transmission area start address is set to the start address of the second data area, and the transmission area end address is set to the end address of the second data area.

14. The data transfer control device as defined in claim 1.

wherein data transfer is in accordance with the IEEE 1394 standard.

15. The data transfer control device as defined in claim 5,
5 wherein data transfer is in accordance with the IEEE 1394 standard.

16. The data transfer control device as defined in claim 9,
10 wherein data transfer is in accordance with the IEEE 1394 standard.

17. Electronic equipment comprising:
15 the data transfer control device as defined in any of claims 1 to 4, or 14;
a device which performs given processing on data that has been received from another node through the data transfer control device and a bus; and
a device which outputs or stores data that has been subjected to processing.

20 18. Electronic equipment comprising:
a data transfer control device as defined in any of claims 5 to 8, or 15;
a device which performs given processing on data that has been received from another node through the data transfer control device and a bus; and
a device which outputs or stores data that has been

subjected to processing.

19. Electronic equipment comprising:

a data transfer control device as defined in any of claims

5 9 to 13, or 16;

a device which performs given processing on data that has been received from another node through the data transfer control device and a bus; and

10 a device which outputs or stores data that has been subjected to processing.

20. Electronic equipment comprising:

a data transfer control device as defined in any of claims

1 1 to 4, or 14;

15 a device which performs given processing on data that is to be transferred to another node through the data transfer control device and a bus; and

a device which takes in data to be subjected to processing.

20

21. Electronic equipment comprising:

a data transfer control device as defined in any of claims

5 5 to 8, or 15;

25 a device which performs given processing on data that is to be transferred to another node through the data transfer control device and a bus; and

a device which takes in data to be subjected to

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processing.

22. ~~Electronic equipment comprising:~~

~~a data transfer control device as defined in any of claims
5 9 to 13, or 16;~~

~~a device which performs given processing on data that is
to be transferred to another node through the data transfer
control device and a bus; and~~

~~10 a device which takes in data to be subjected to
processing.~~

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